

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) An electromagnetic digitizer sensor coupled to a processor, comprising:

a substrate;

a first array of sensing loops each coupled between the processor and a first potential node, each sensing loop in the first array being selectively connectable to the processor and further being selectively connectable to the first potential node; and

a second array of sensing loops each coupled between the processor and the first potential node, each sensing loop in the second array being selectively connectable to the processor and further being selectively connectable to the first potential node.

wherein the first array of sensing loops are each disposed at a first level of the substrate but not at a different second level of the substrate, and

wherein the second array of sensing loops are each disposed at the second level of the substrate but not the first level.

2. (Original) The electromagnetic digitizer sensor of claim 1, wherein the first potential node is a ground node.

3. (Original) The electromagnetic digitizer sensor of claim 1, further including:  
a substrate, wherein the first array of sensing loops are formed at a first level of the substrate; and

a second array of sensing loops each coupled between the processor and a second potential node, each sensing loop in the second array being switchable to connect and disconnect to the processor and further being switchable to connect and disconnect to the second potential node, the second array being formed on a second level of the substrate different from the first level.

4. (Original) The electromagnetic digitizer sensor of claim 3, wherein at least one of the first and second levels of the substrate are a surface of the substrate.

Claims 5-7. (Canceled).

8. (Original) An electromagnetic digitizer sensor, comprising:  
a substrate having first and second different levels;  
an array of first sensing loops each disposed at the first level but not the second level; and  
an array of second sensing loops each disposed at the second level but not the first level.

9. (Original) The electromagnetic digitizer sensor of claim 8, wherein the first sensing loops are arranged in a comb-like pattern and the second sensing loops are arranged in a comb-like pattern.

10. (Original) The electromagnetic digitizer sensor of claim 8, integrated with a display.

11. (Currently Amended) An electromagnetic digitizer sensor coupled to a processor, comprising:

a substrate;

a first plurality of sensing traces electrically coupled in parallel between the processor and a first node;

a second plurality of sensing traces electrically coupled in parallel between a second node and the first node;

a first plurality of switches each coupled between one of the first plurality of sensing traces and the processor; and

a second plurality of switches each coupled between one of the second plurality of sensing ~~paths~~ traces and the second node,

a third plurality of sensing traces electrically coupled in parallel between the processor and a third node;

a fourth plurality of sensing traces electrically coupled in parallel between the processor and a fourth node;

a third plurality of switches each coupled between one of the third plurality of sensing traces and the processor; and

a fourth plurality of switches each coupled between one of the fourth plurality of sensing traces and the fourth node,

wherein the first and second pluralities of sensing traces are disposed at a first level of the substrate but not at a second level of the substrate, and

wherein the third and fourth pluralities of sensing traces are disposed at the second level of the substrate but not at the first level of the substrate.

12. (Currently Amended) The electromagnetic digitizer sensor of claim 11, wherein the second node and the fourth node ~~is~~ are each a ground node.

13. (Currently Amended) The electromagnetic digitizer sensor of claim 11, wherein the first node ~~is~~ and the third node are each a floating node.

14. (Original) The electromagnetic digitizer sensor of claim 11, wherein the first plurality of sensing traces are disposed so as to be interleaved with the second plurality of sensing traces.

15. (Original) The electromagnetic digitizer sensor of claim 11, wherein the first plurality of switches are embodied as a multiplexor.

16. (Currently Amended) The electromagnetic digitizer sensor of claim 11, wherein the first plurality of sensing traces are further switchably connectable to the second node, ~~and the~~ second plurality of sensing traces are further switchably connectable to the processor, the third

plurality of sensing traces are further switchably connectable to the fourth node, and the fourth plurality of sensing traces are further switchably connectable to the processor.

17. (Original) The electromagnetic digitizer sensor of claim 11, wherein the first and second plurality of sensing traces are arranged in a comb-like pattern.

18. (Currently Amended) The electromagnetic digitizer sensor of claim 11, wherein the first and second plurality of sensing traces are each arranged to be physically parallel with each other, and the third and fourth plurality of sensing traces are each arranged to be physically parallel with each other.

19. (Original) The electromagnetic digitizer sensor of claim 11, wherein the first and second plurality of switches are each single-pole-single-throw switches.

20. (New) The electromagnetic digitizer of claim 11, wherein the first and second pluralities of sensing traces form conductive loops that are variable in both size and position depending upon states of the first and second pluralities of switches.

21. (New) The electromagnetic digitizer of claim 20, wherein the third and fourth pluralities of sensing traces form conductive loops that are variable in both size and position depending upon states of the third and fourth pluralities of switches.